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The American Museum Journal

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THE TOUCAN AT HOME — A DETAIL OF THE ORIZABA GROUP

The great beaks of many tropical birds look strange to observers acquainted with birds of temperate climes only. All of the thirty-four birds in the Orizaba group are representatives of the tropical parts of the State of Vera Cruz, the studies for the group having been made at Cordova, altitude 3500 feet — "Three New Groups," page 101

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MARCH, 1912

No. 3

IN SEARCH OF CROCKER LAND

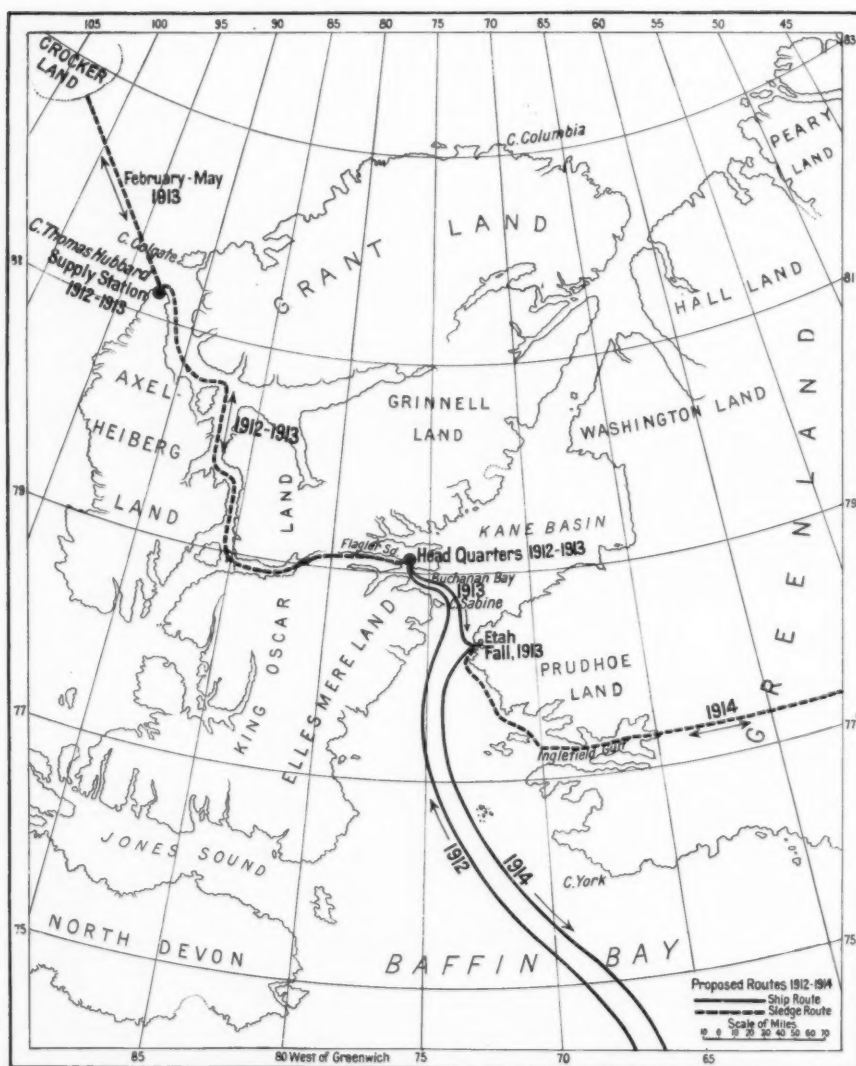
A NEW VENTURE INTO ARCTIC REGIONS — THE CROCKER LAND EXPEDITION
WILL ENDEAVOR TO SOLVE THE WORLD'S LAST GREAT GEOGRAPHICAL
PROBLEM — SEARCH FOR THE UNEXPLORED LAND SIGHTED BY
PEARY ON HIS SUCCESSFUL DASH TO THE POLE

By Edmund Otis Hovey

IS there a "Crocker Land" in the Arctic Ocean? Admiral Peary believes that he saw such a place through his field glasses in June, 1906, whether island, archipelago or lesser continental mass, he knows not. Also from recorded tidal observations, the existence of land at the given spot has been deduced by Dr. R. A. Harris, tidal expert of the United States Coast and Geodetic Survey.

For several years this question of the Arctic Seas has been in the minds of explorers and geographers. Two men, George Borup and Donald B. MacMillan, both of Peary's successful polar party, have now volunteered to answer it, while the American Museum of Natural History and the American Geographical Society consider the question of such commanding importance that they have decided to give their support to these men in an expedition to reach and map the new Crocker Land — if it exists. The expedition will also, while en route to the unknown land, make all the geological, geographical and other scientific studies that circumstances may permit.

Admiral R. E. Peary in his book, *Nearest the Pole*, records the following observations made June 30 from the summit of Cape Thomas Hubbard, the most northern point of Axel Heiberg Land: "The clear day greatly favored my work in taking a round of angles and with the glasses I could make out, apparently a little more distinctly [than when seen a few days ago], the snow-clad summits of the distant land in the northwest above the ice horizon." Peary had previously seen this land from the top of Cape Colgate, 2000 feet above the sea level. He located the new land at about long. 100° W. and lat. 83° N., or about one hundred and thirty miles from Cape Thomas Hubbard, and gave it the name of "Crocker Land," in honor of the late Mr. George Crocker, of the Peary Arctic Club. Dr. Harris states his belief in the monograph, *Arctic Tides* (1911), that his Crocker Land is the eastern edge of a great area of land or archipelago north of western America and eastern Siberia.



PROPOSED ROUTE FOR THE CROCKER LAND EXPEDITION

Unexplored land is thought to exist north of western America. Admiral Peary believes that he sighted such land — which he named "Crocker Land" — from Cape Colgate, when he started over the ice on his successful dash to the pole. Also Dr. R. A. Harris of the United States Coast and Geodetic Survey concludes from his study of Arctic tides that this land exists.

An expedition to map the unknown land will leave Sydney, Nova Scotia, in July, 1912 and proceeding through Baffin Bay will establish winter quarters on the south shore of Flagler Sound. It will transport supplies by sledge to Cape Thomas Hubbard during the winter and from this point will continue the journey across the ice to Crocker Land when the dawn comes in the spring.

The verification of these observations and deductions seems the last great geographical problem left to the world for solution. Nansen, in an article on "North Polar Problems" (1907) says, "The determination of the extent of the continental shelf to the north of Axel Heiberg Land and Ellesmere Land would be a great achievement A satisfactory solution of this problem would be of more scientific value than even the attainment of the Pole The extent and shape of the polar continental shelf, which means the real continental mass, is the great feature of north polar geography which is of much more importance, geographically or geomorphologically, than the possible occurrence of unknown islands on this shelf."

The expedition plans to make continuous geological, geographical, paleontological and physiological observations and to collect specimens through the three hundred and thirty miles across Ellesmere Land from Flagler Bay to Cape Thomas Hubbard. Then from Cape Thomas Hubbard to Crocker Land it will take soundings in order to determine whether the continental shelf extends as far as that land or reaches beyond it, and in addition will make tidal

observations and temperature observations at various depths. On Crocker Land, it will spend two months mapping coast line and interior topographically and geologically, and collecting specimens. It plans to make also a study of glaciers, glacial ice caps and glacial motion, for the purpose of



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Borup, MacMillan and Kyutah, who were with Peary on his last polar expedition



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The camp oil stove on which tea was made in the Arctic



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The power by which supplies for the Crocker Land expedition will be transported through the 330 miles from Flagler Sound to Cape Thomas Hubbard



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Opening a can of pemmican. The expedition will procure dogs for the sledges on the way north after leaving Sydney, Nova Scotia, as well as whale and walrus meat to supplement the supply of pemmican

solving the problem of the process of land-molding under a continuous, moving ice cap, since the process is not yet understood, and the "glacial fringe" off the north coast of Grant Land offers a particularly interesting field for study. Wherever possible the expedition will collect Arctic small mammals and fishes, for these are little represented in collections, and also birds, for no habitat group of Arctic birds has been attempted in any of our museums.

The following is the itinerary as planned: The expedition will leave Sydney, Nova Scotia, by special steamer about July 20, 1912, procuring dogs for the sledges on the way northward and whale and walrus meat. It will land on the south side of Bache Peninsula (Flagler Bay), lat. $79^{\circ} 10' N.$, and will there establish winter quarters, sending the ship home. About the middle of September sledging operations can begin for the purpose of getting supplies to Cape Thomas Hubbard, which work can be carried on throughout the winter during the moonlight periods. With the advent of dawn in February, 1913, the journey will be made from Cape Thomas Hubbard across the ice to Crocker Land. The return trip will be begun about May first, and on reaching Cape Thomas Hubbard again, a messenger will be sent to North Star Bay with news of the expedition, to be forwarded by Danish steamer to civilization. After this, the scientific work will progress in Grant Land and along the return route to the former winter quarters on Flagler Bay, where arrival may be expected in July, 1913. Then during the summer, supplies and collections will be transferred to Etah, from which point the expedition will move in the spring by way of Whale Sound (Inglefield Gulf) directly eastward to the summit of the ice cap of Greenland, at the widest part of that island. The return to New York is planned for the autumn of 1914 and by special ship.

The leaders of the expedition will be George Borup (A. B. Yale, 1907), assistant curator of geology in the Museum, and Donald B. MacMillan (A. M. Bowdoin, 1910). They will take with them a competent physician, a cook and a veteran general assistant. Messrs. Borup and MacMillan are well-known to both the general and scientific public as members of the last polar expedition under Admiral Peary, and through Mr. Borup's book, *A Tenderfoot with Peary* and Mr. MacMillan's lectures given throughout the country. These men have received Peary's unqualified indorsement for the work in hand. Mr. Borup has been devoting his whole attention during the past two and a half years to studies in the field and at Yale thoroughly to fit himself for scientific geological and geographical exploration. He is a Fellow of the Royal Geographical Society of London and a member of the New York Academy of Sciences. Mr. MacMillan since his return from the Peary expedition, has been studying ethnology and practical astronomy at Harvard. In the summer of 1910, he was a member of the Cabot Party which was the first to cross Central Labrador from the sea to George River, and he

spent the summer of 1911 cruising along the coast of Labrador in an eighteen-foot open canoe studying the Eskimo from Hopedale to Killinek (lat. 60° N.). He is a member of the American Geographical Society and of the Appalachian Mountain Club.

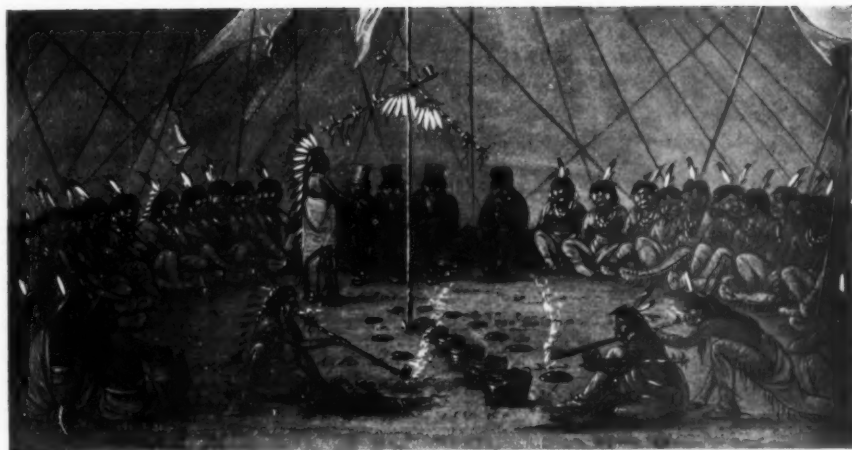
The following are some of the principal items of the outfit that must be provided for this expedition: three years' provisions for five white men with their helpers and dogs, much of which, particularly the pemmican, has to be especially prepared and packed; suitable clothing; instruments for all kinds of observations and records; photographic supplies including a camera for moving pictures; a power boat for use in Flagler Bay and in crossing to Etah; salary of physician and wages of cook and helpers; a steamship to take the party to Flagler Bay in 1912 and another to go up for it in 1914.

It is estimated that not less than fifty thousand dollars¹ must be provided for the absolute needs of the expedition, in order to enable it to accomplish the valuable results that have been outlined above, and this in spite of the fact that Messrs. Borup and MacMillan generously serve the expedition without salary during the period of its absence from New York.

In addition to the appropriations made by the Museum and the Geographical Society, subscriptions have already been made or promised by Yale University, Bowdoin College, the New York Academy of Sciences, Worcester Academy and Groton School, and by the following individuals: General Thomas H. Hubbard, Admiral R. E. Peary, Mrs. C. B. Alexander, Zenas Crane, John E. Thayer, Theodore Roosevelt, Mrs. G. B. French, Harry E. Converse, Andrew G. Weeks, Richard S. Dow, Herbert Austen, Robert P. Simpson, John Larkin, E. W. Clark, L. H. Greenwood, J. Sanford Barnes, Jr., Paul B. Morgan, Samuel Rea, W. W. Atterbury and Lewis A. Platt.

The honorary committee on the Crocker Land expedition consists of Henry Fairfield Osborn, president of the American Museum of Natural History; Chandler Robbins, chairman of the Council of the American Geographical Society, and Thomas H. Hubbard, president of the Peary Arctic Club. The committee in charge comprises, E. O. Hovey, American Museum of Natural History and H. L. Bridgman, Peary Arctic Club.

¹ There remains to be raised about thirty thousand dollars, and the Museum has opened an account, known as the "Crocker Land Expedition Fund" for the purpose of receiving and caring for all subscriptions made to the expedition. Checks to further its purpose should be drawn payable to the American Museum of Natural History and forwarded to E. O. Hovey of the Crocker Land Expedition Committee, to whom, furthermore, all correspondence relating to the expedition should be addressed.



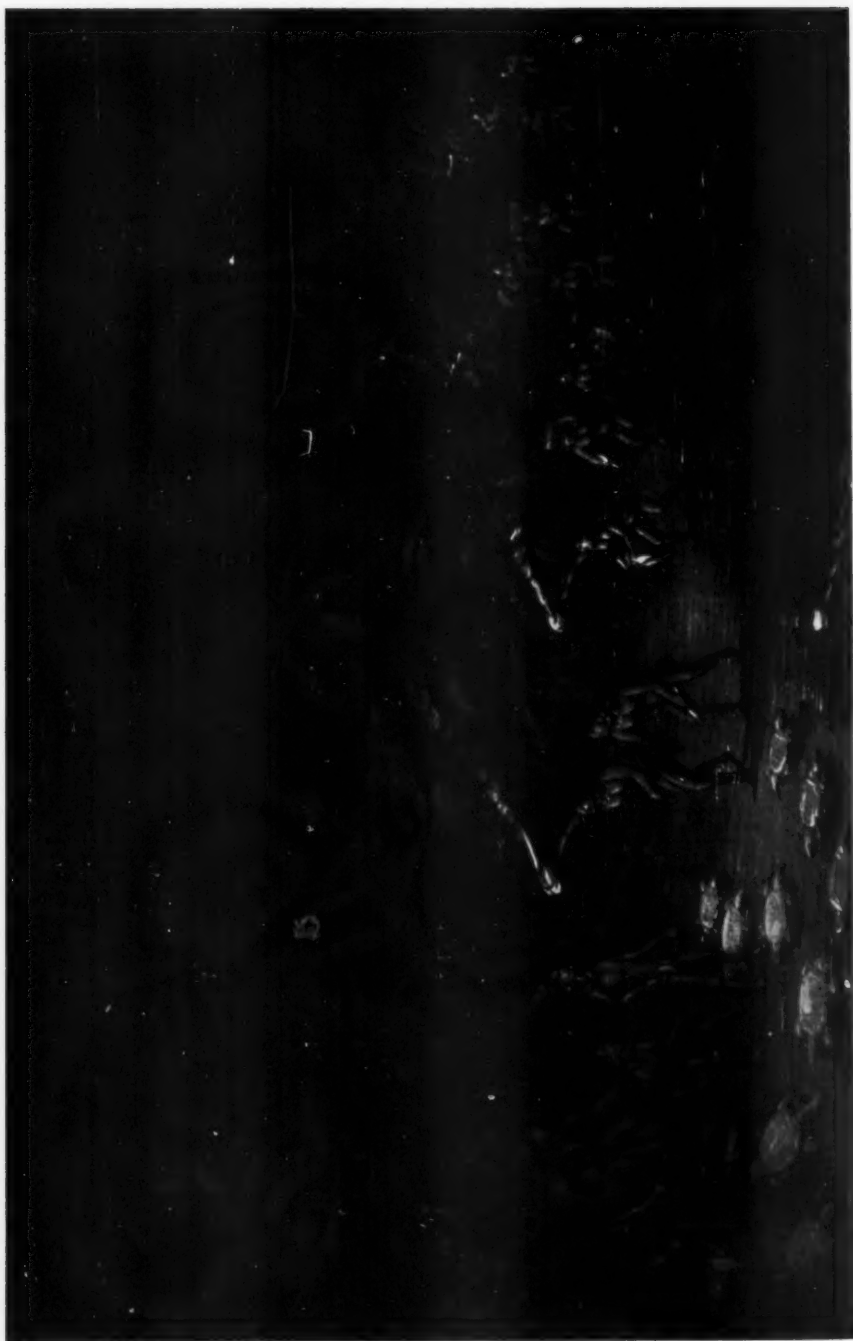
"A Dog Feast was offered by the Sioux chiefs of the Upper Missouri, in 1832, to Mr. Sanford (the Indian agent), Pierre Choteau, K McKenzie, and the author. The greatest pledge of respect and friendship the Indians can give to strangers in their country is in the 'Dog Feast,' in which the flesh of their favorite dogs must necessarily be served." [This is the artist's inscription on his painting]

THE CATLIN PAINTINGS

By Clark Wissler

THE famous cartoon collection¹ of Indian sketches in oil made by George Catlin, the celebrated Indian writer and painter, has been purchased for the Museum by Mr. Ogden Mills. These canvases, left at the death of the artist in 1872 in the possession of his daughter, Miss Elizabeth W. Catlin, who still resides in New York City, have great historical value because they are the earliest authentic sketches representing the customs, ceremonies and habitations of the wild Indian tribes. When Catlin visited these tribes they were practically uninfluenced by civilization: it was a time when Indian life was real, not transitional as later. Mr. Deming, the well-known artist says regarding the work, "I have known Indians for forty years and have seen many who were very little influenced by contact with the white man and I can vouch for the truthfulness of these pictures. They are, outside of Bodmer's and Captain Eastman's pictures, the only record we have of the Plains Indians and are valuable as a pictorial record. I want to speak of another view which the scientist does not appreciate. These Catlin pictures are the most decorative Indian pictures

¹ The collection contains 417 pictures — 118 showing types of North American Indians, 112, customs of North American Indians, 19, ceremonies of North American Indians, 28 are landscapes and hunting scenes, and 19 depict South American natives and landscapes, while 20 treat of miscellaneous subjects. Among the latter is a series of 24 representing the life history of the famous La Salle and his wanderings up and down the Mississippi. Some 250 of the sketches portray types and scenes from American Indian life as observed among the different tribes of the Missouri Valley from 1832-1840. Many of them are the original paintings for the plates in the author's well-known books.



TURTLE HUNT BY TORCHLIGHT

A painting of the South American series, with weird color effect, the flame of the torches alone bringing out the action of the figures and the outlines of turtles, beach and sea. The men have captured the turtles and turned them on their backs; the women are approaching with knives and baskets to do the butchering and carry home the meat.

Acting upon a suggestion from Humboldt, Catlin sailed for Venezuela, passed into the interior and over into the valley of the Amazon. For six years he explored South America, visiting all the tribes on the Pacific slope, also wandering through Yucatan and portions of Old Mexico



TAPUYA WAR DANCE, SOUTH AMERICAN SERIES

The north shore of the Amazon above Obidos. The Indians are giving the war dance for Mr. Catlin who is seen at the right in the painting. South America, we have ninety canvases representing characteristic scenes among the natives. These South American sketches are perhaps the most unique portion of the collection, few of them ever having been published



"Smoking the Shield" — When a young Camanchee aspires to the title of warrior, he must have a shield. He must himself kill the buffalo and then invite the warriors, who all assemble to witness the smoking of the hide for the shield. They are shown dancing around it to ensure its hardness, and its proof against arrows

that have ever been painted. There is not a picture in the collection that I would not be proud to hang on my wall. They have a grand beauty of line composition, a great harmony of tone that makes them very valuable as works of art. They have the scenic charm of a Japanese print."

It is interesting to know that Catlin prepared this cartoon collection with the idea that it should sometime find a place in a great museum or university for use in ethnological study. The idea was suggested to him by the famous Humboldt, who seems to have taken a great interest in Catlin's work. According to Miss Catlin, it was Humboldt who suggested even the form, size and range of the collection. It seems peculiarly fitting that within the lifetime of Catlin's own daughter, this large collection of paintings should have found an abiding place in a large museum in the artist's home city, thus fulfilling his fondest dream.

The chief interest in the collection is historical and ethnological. The pictures have a place in the anthropological and library sections of the



A Buffalo chase.— Mr. Catlin and a Sioux Indian masked under wolf skins are approaching a herd of buffaloes. Mr. Catlin is seen to be making sketches or notes while the Indian carries the arrows. There are many paintings of buffaloes in the collection.

Museum because they are the work of the first great Indian painter. As Miss Catlin truly says, "During eight years spent among them, he visited every known tribe in the Mississippi Valley and gave especial attention to the differences in their types, their customs, their religious ceremonies, some canvases concerning the last having now become valuable records as the ceremonies themselves have died out. In this manner he became unconsciously the first American ethnologist, publishing in the following years his collected letters from those then unknown regions in a work entitled *Catlin's Notes Among the North American Indians*' (1841), which has been recognized by the Smithsonian Institution and other scientific societies as a true history of the Indian people."

Since Catlin's day McKenna and Hall, Bodmer, Schoolcraft and Curtis have followed with similar series of illustrated publications, but so far as we know, the idea was original with Catlin. His famous two-volume book passed through many editions and is still in constant demand.

RHINOCEROS-HUNTING—A SPORTSMAN'S AFRICAN NOTES

By E. Hubert Litchfield

Those who have visited the African hall during the past two years will have observed on its walls more than three hundred heads of the large game of Africa. These constitute a collection of unusual value mounted by Rowland Ward of London and loaned to the Museum by E. Hubert Litchfield, Henry Sampson, Jr. and Bayard Domfield's article which follows is of interest because of his conclusion as to the rapid extinction of African large game and because it furnishes on the habits of the black rhinoceros. Opinions are likely to differ among sportsmen and naturalists as to the habits or the dangerous character of any given wild animal and every new reliable record of habit accompanied by a statement of the conditions of the animal's life, the character of season of the year, helps to reconcile these different opinions in an accurate knowledge of the species.—Editor.

As a result of a four months' hunting trip in British East Africa in 1909, we were able to bring to New

York some thirty-



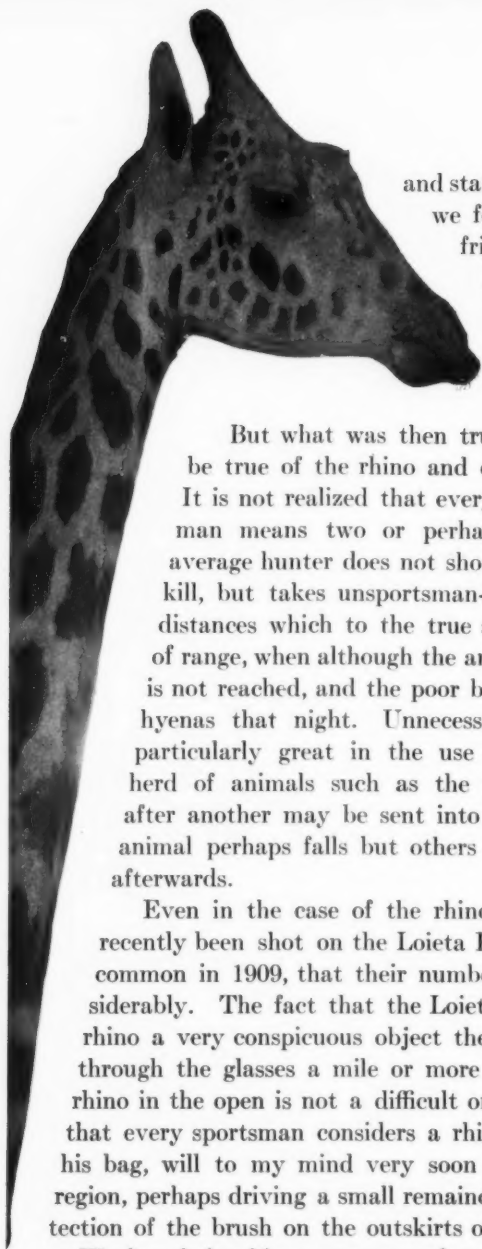
Female black rhinoceros (the horns are of unusual length) shot by Henry Sampson, Jr. on the Loleta Plains, British East Africa. Rhinoceros-hunting is dangerous in brush or tall grass country where the hunter may at any moment find himself confronted by a vicious-tempered rhino ready to charge. The rhinoceros is doomed to almost immediate extinction in the plains regions of Africa, since every sportsman considers a rhino a necessary part of his bag and the animals are easy to stalk in open country

eight different kinds of mammals, representing most of the African species with the exception of the elephant. That we were unable to bring back any elephants was due to the fact that large males with tusks exceeding sixty pounds in weight were very scarce. We saw three or four hundred elephants but not a single male large enough to shoot. Even on going to the Mount Elgon country, a region formerly noted for its great herds, and after remaining there a full month with the direct intention of securing specimens of bull elephants, we had to give it up, finding none large enough to furnish an excuse for killing. We did secure in the Elgon country, however, very fine specimens of the Sing-Sing waterbuck, some of the heads measuring thirty-two inches in length; and to the north of the Uganda railway in the direction of Mount Kenia, we secured unusually good specimens of the African buffalo, the largest with a spread of horns of forty-five inches. The country along the Uganda railway about Simba



Male black rhinoceros (note the curve of the horns and their thickness) shot by E. Herbert Litchfield. Rhino horns do not consist of bone or horn but of bristles closely compressed, and they are not connected with the skull. According to African superstitions, goblets made from rhino horns have been thought to have power to give health to him who drinks, even to tell him by a mysterious effervescence if any poison lurk in the draught.

From the loan collection of more than three hundred heads on the walls of the African hall



and stations toward the Tsavo River we found to be the home of the fringe-eared oryx and the lesser kudu. The Loieta Plains, where we did our first hunting, about fifty miles south of the Uganda railway, proved rich in black rhinos.

But what was then true of the elephant will soon be true of the rhino and of other large African game. It is not realized that every animal shot by the sportsman means two or perhaps several killed. For the average hunter does not shoot only when near enough to kill, but takes unsportsman-like chances. He shoots at distances which to the true sportsman are decidedly out of range, when although the animal may be hit, a vital spot is not reached, and the poor brute escapes to fall a prey to hyenas that night. Unnecessary destruction of game is particularly great in the use of the repeating rifle on a herd of animals such as the antelope—many shots one after another may be sent into the herd as it retreats, one animal perhaps falls but others are wounded to die shortly afterwards.

Even in the case of the rhinos, such large numbers have recently been shot on the Loieta Plains, where the species was common in 1909, that their numbers have decreased very considerably. The fact that the Loieta country is open makes the rhino a very conspicuous object there. He can usually be seen through the glasses a mile or more away, and the stalk of the rhino in the open is not a difficult one. This, added to the fact that every sportsman considers a rhino a very necessary part of his bag, will to my mind very soon kill them off in this plains region, perhaps driving a small remainder of them to seek the protection of the brush on the outskirts of the Loieta.

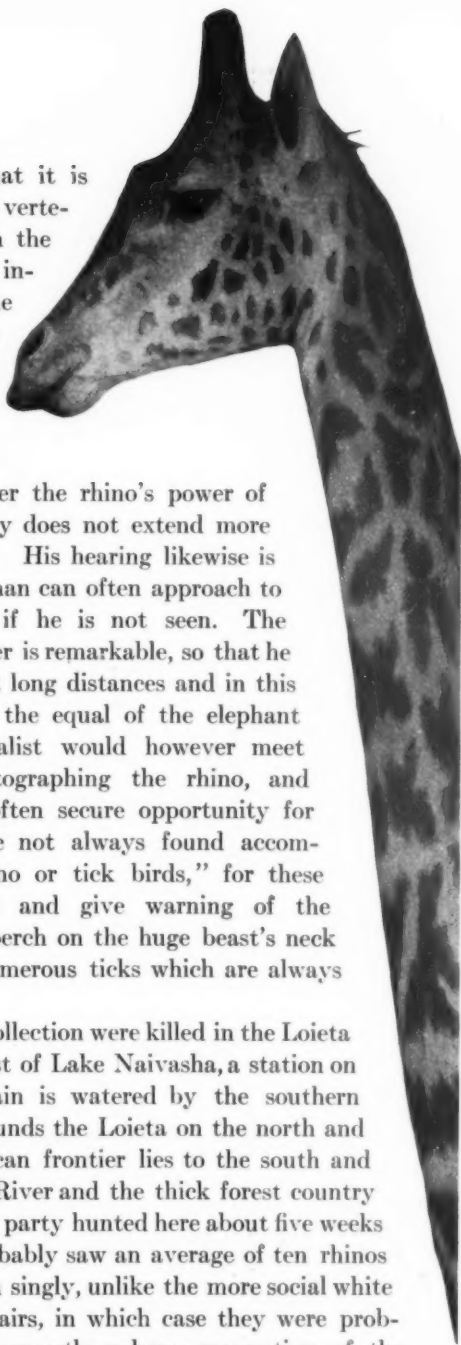
We found the rhinos numerous also, in fact too numerous for our comfort, in the country between the Athi and Tana Rivers about twenty-five miles north of Donya Sabuk Mountain. This country is one of tall grass and thick brush and it is my opinion that here the rhinos may last for some years to come; they are better protected from man by the nature of the country and there is plenty of brush and grass, their natural food.

‡ In such brush or in tall grass country the rhino is a dangerous animal to hunt, for one is apt to walk right on top of it unexpectedly and draw a charge before fully prepared. The presence of the rhino cannot be guessed till it rises in the grass or makes the puffing and

wheezing noises indicating that it is startled. A shot through the vertebrae of the neck or one through the brain will of course drop it instantly, while a shot behind the shoulder will cause it to die within a few moments. The difficulty however is to get in a suitable position to fire the fatal shot.

Fortunately for the hunter the rhino's power of vision is very bad and probably does not extend more than thirty-five or fifty yards. His hearing likewise is far below the average, and a man can often approach to within a few feet up wind if he is not seen. The animal's sense of smell however is remarkable, so that he is able to discover enemies at long distances and in this respect he is probably almost the equal of the elephant and the buffalo. The naturalist would however meet success more often in photographing the rhino, and the sportsman would more often secure opportunity for a correct shot if rhinos were not always found accompanied by the so-called "rhino or tick birds," for these birds are very clear-sighted and give warning of the approach of enemies. They perch on the huge beast's neck and back, and feed on the numerous ticks which are always to be found.

Most of the rhinos of our collection were killed in the Loieta some sixty miles south and west of Lake Naivasha, a station on the Uganda railroad. The plain is watered by the southern Guaso Nyiro River, which bounds the Loieta on the north and east. The German East African frontier lies to the south and the Amala or Olkeju Eugubi River and the thick forest country called Osero to the west. Our party hunted here about five weeks and during that time we probably saw an average of ten rhinos daily. Usually they were seen singly, unlike the more social white rhinos, though sometimes in pairs, in which case they were probably female and young. Apparently a large proportion of the animals seen were females. Why, I was unable to tell, except that possibly the males, having the larger horns had been more sought after by hunters. Of those shot by our party, five were females and one was a male. The horns of female rhinos are almost always thinner than those of the male, though sometimes fully as long. Our largest head, the one shot by Henry Sampson, Jr., was a female with an exceptionally long posterior horn. Horns of the males are usually much thicker at the base



Field naturalists report that no other large game animal of Africa is more difficult to approach with a camera.



THE WORLD'S RECORD HEAD OF JACKSON'S HARTEBEEST

This animal was shot by Mr. Litchfield in British East Africa in 1909; the length of horn along the curve is 26 inches, the distance between the tips of the horns is 14 $\frac{1}{2}$ inches. Length of the horn differs greatly among the members of any species, and that certain specimens have horns of unusual length is interesting from the standpoint of individual variation and evolution, although the record head itself can have little more scientific value than any head with horns of good length



Young African elephant

Copyright by Carl E. Akeley

and more curved. In several of the so-called "Keitloa" type seen, the posterior horn was about as long as the anterior.

In this country we found that rhinos sleep during the day, usually many miles away from any drinking-pool or other water. They sleep however very intermittently, getting up every now and then to look around and then lie down again. They are likely to sleep with back to the wind which enables them to look down wind, their acute sense of smell protecting them to the rear. This habit of sleeping during the day is possibly due to their having been so persistently hunted. We were told that in unhunted countries rhinos feed a great deal during the day and sleep at night.

In the expedition of 1909 our party had permission to shoot in several districts which otherwise would have been reserved. This was through the courtesy of the officials of the British East African government. The permission was granted through letters which the American Museum of Natural History had kindly given to us and of course any animal shot in a reservation became the property of the Museum and devoted to scientific purposes. As a result of this agreement we secured some twenty specimens.

On the Usha Gishu plateau toward Mount Elgon, I believe rhinos were once very plentiful, but we saw few and a trip there would probably not now pay for the expense entailed. I understand however that rhinos abound in the Sugota and Jubaland game reserve, recently opened to sportsmen, and I am sure that a trip to the east and south of Lake Rudolf would result in securing large specimens. This ground has been very little shot over on account of its inaccessibility and the relative expense of an expedition.



THE WILD BOAR GROUP

A winter scene in the forests of north Germany. The boar group is the first group in the American Museum to have a sculptured background; the scene, middle and distant boars are modeled in low relief. Boars presented by Walter Winans; group designed and executed by Frederick Blaschke; sculptured background painted by Albert Operti



The mother and one of the little wild boars

THREE NEW GROUPS

NEW MUSEUM EXHIBITS THAT CARRY THE OBSERVER INTO A SNOWBOUND FOREST OF NORTH GERMANY, A TROPICAL MEXICAN JUNGLE AND UNDER THE WATERS OF A MISSISSIPPI LAKE

By Frederic A. Lucas

THREE noteworthy groups have been added to the exhibits of the American Museum. One of them, the group of wild boars, given by Mr. Walter Winans, depicts a winter scene in a North German forest. A driving snowstorm has covered hills and trees with light powdery snow, and as the wind dies down toward sunset the boars are abroad for their suppers. In the foreground a big tusker has strayed into a neighbor's



A portion of the Orizaba bird group in which the Rio Blanca is seen pouring its waters down through the tropical forests of Vera Cruz. [The part of the background that pictures the Rio Blanca is at the left in the group and does not show in the general view on the following page]

domain and a bitter fight is on. The mother pig hastens up to see that no harm befalls her six months' old piglets but they, accustomed to quarrels, doze or feed unmindful of the combat going on so near them.

This group by Frederick Blaschke is in one way an innovation, in that part of the background including the trees is modeled in low relief, aiding to contribute to the apparent depth of the scene.

Another, the Orizaba bird group has been, like most museum groups,



GENERAL VIEW OF THE ORIZABA GROUP

From the edge of a tropical forest [the real foreground] stretch miles of similar forest far below the observer and beyond to Mount Orizaba [the painted background]. Group prepared under the direction of Frank M. Chapman from field studies made in 1910. Background painted by Robert Bruce Horsfall from sketches made at Mount Orizaba by Henry A. Ferguson and Louis Agassiz Fuertes; birds mounted by Henry C. Raven; accessories made and group assembled by William Peters

Transparencies at the sides of the group [see following pages] show scenes from different altitudes in the country portrayed in the painted background, from the tropical forest to the cold summit of Mount Orizaba

*Transparencies
at the left of the
Orizaba group.*



**Boreal Zone
Timberline,**
alt. 13,000 ft.



**Boreal Zone
Pines and
Spruces,** alt.
9500 ft.



**Temperate
Zone
Clearings,** alt.
5000 ft.



**Tropical Zone
Rio Blanca,**
alt. 1000 ft.

some time in preparation, but it is well worth waiting for. From the upper side of a gorge through which runs the Rio Blanca, the observer gazes through the vine-hung tropical forest to where Mount Orizaba bathed in sunlight rises, more than 18,000 feet, its head crowned with perpetual snow.


In the foreground are tropical birds — motmots which swing their tails like pendulums, trogons, parrots, tanagers and big-beaked toucans, while here and there humming birds hover over rare orchids. On either side of the group is a series of transparencies, showing how the character of the country changes as one goes upward from the plain, passing through the dense forest to the barren higher levels of the mountain and its top capped with snow. As Mr. Chapman tells us in the label, we have here a section of country more than three miles high and to find on a level the changes to be met with in these three miles we would have to journey from Vera Cruz to Maine, a distance of three thousand miles.

The background is by Robert Bruce Horsfall, the birds by Henry C. Raven, while the accessories were made by and under the supervision of William Peters by whom the whole was assembled.

The Orizaba group has been made possible through the North American Ornithology Fund, and the Museum's indebtedness is acknowledged to those contributors to this fund whose generous support for several years has brought into existence some of the best in the series of bird habitat groups. These benefactors of the

Museum are Franklin Brandreth, John L. Cadwalader, James C. Carter, Mrs. Louisine W. Havemeyer, H. B. Hollins, Mrs. Morris K. Jesup, Charles Lanier, Miss Carolyn Morgan, Henry Clay Pierce, Henry W. Poor, F. Augustus Schermerhorn, Mrs. Phillip Schuyler, Mrs. John B. Trevor and Mrs. Robert Winthrop.

The third is the paddlefish or spoonbill sturgeon group in the hall of fishes. It is as barren in respect to vegetation as the Orizaba group is luxuriant. A group of this character is perhaps the most difficult proposition that the preparator has to encounter. There is absolutely nothing in the way of accessories to help him and he has to solve as best he may the problem of making a school of fishes hanging in mid air look as though swimming in water. The casts of fishes were made by Dwight Franklin and James C. Bell, while Albert Operti has deftly painted the remainder of the school.

The spoonbill, which may weigh one hundred and sixty pounds, is a market fish, one of the most valuable of those taken from the Lower Mississippi. Moreover its roe makes a caviar of good quality and adds to the profits of the spoonbill fishery. The species is known only in the Mississippi and neighboring waters however, and so has not the importance commercially that it would assume if more widely distributed. The casts for the group were obtained on a Museum expedition to Moon Lake, Mississippi, in 1909 and both the field study and the work on the group have been carried on by means of the Cleveland H. Dodge Fund. 



*Transparencies
at the right of
the Orizaba
group*

Boreal Zone
Above timber-
line, alt.
13,500 ft.



Boreal Zone
Pines and
Spruces, alt.
9500 ft.



Temperate
Zone
Oak forest, alt.
5000 ft.



Tropical Zone
Primeval for-
est, alt. 1000 ft.



DETAIL OF THE NEW BUTTERFLY GROUP

Monarch butterflies travel thousands together in what seems to be a migration southward in the fall. Year after year the preparatory swarming is reported from certain given districts where they cover the trees so that the green of the leaves is obscured by the brown of innumerable butterfly wings

DO BUTTERFLIES MIGRATE?

FIVE HUNDRED MONARCH BUTTERFLIES IN A NEW MUSEUM GROUP THAT
ILLUSTRATES THE SOCIAL INSTINCT OF THE SPECIES

By Frank E. Lutz

THE annual migration of birds is a fact of everyday knowledge. Similar migrations of other animals such as certain fish are also fairly well-known, but very few cases of definite migrations of insects have come to the attention of entomologists even. One of the most striking of these cases occurs in this part of the world every year and the preparatory swarming is illustrated in a group just installed in the hall of insect biology.

The larvæ of the monarch butterfly (*Anosia plexippus*) feed during the summer on various species of milkweed, protected from insect-eating birds by their "warning colors" which are thought to advertise the fact that they are ill-tasting, acrid creatures. The adults emerge in the fall in great numbers from beautiful green chrysalids decorated with black and gold, and these butterflies also are gaudy in coloring and are inedible.

Now, the mourning cloak (*Euranessa antiopa*) and certain other butterflies do pass the winter with us as adults so that there would seem to be no reason in external conditions why the monarchs could not. In the early autumn however they begin to flutter southward and in this movement many hundreds or even thousands of individuals fly together, often remaining in one locality for several days. Curiously enough, certain definite resting places, or gathering places, seem to be used year after year. Such an one is near Clinton, Connecticut, where the specimens for a Museum group were obtained in the fall of 1911. The swarming butterflies are so numerous and clustered so thickly that the leaves are obscured and the brownish undersides of the wings of the resting butterflies give to the trees a truly autumnal appearance.

Then comes the continuance of the southward flight. In places the air is brown with fluttering butterflies. As they reach the more southern states they doubtless spread out over the country again, but we are indeed ignorant as to how far those individuals which were born in New England for instance, really go, how they spend the winter, or from whence the monarchs of the next New England spring come. No one has put on record a return flocking from the South, so that if there be a migration northward it would seem to be only by stragglers. Furthermore the specimens found

here in the spring seem to be in rather too good a condition to have made the journey. On the other hand no specimens have been found in this vicinity in the winter and as adults are fairly common in May, it is just as hard to believe that they did not come up from the South.

Long flights of butterflies and moths are not rare. One of the longest was put on record by Frederic A. Lucas in 1887 when he saw many *Lepidoptera*, chiefly moths, one thousand miles off the coast of Brazil. Such flights however are not migrations in the true sense. These insects had doubtless been blown out of sight of land and had simply kept on flying because of necessity.

The migratory locust is not a similar case for it moves in swarms only when the birth rate has been so large that the local food supply is exhausted. The adult monarchs are certainly not hard put to it for food as not only are flowers abundant when the migration starts but also adult butterflies take but little nourishment at any time. The so-called migration of the maggots of certain fungus-gnats (*Sciara* sp.) is, naturally, extremely limited and would not be noticed were it not that they are gregarious in habits. This too, is a movement in search of food. The swarming and migration of the monarch¹ remain a mystery in spite of the fact that they occur all about us every year.

Possibly it is on account of these roaming habits, possibly it is also on account of its protection from birds, that the monarch butterfly is now spreading over the entire earth. It has found its way to Australia, Java, Sumatra and the Philippines. A few specimens are found every year in Great Britain where the entomologist's net is an enemy not to be daunted by gaudy color and acrid taste. It is well established at the Cape Verde Islands and will without doubt shortly have conquered the earth.

¹ What is one of the most interesting, perhaps the most astounding and certainly the most inexpensive group for its size ever prepared in the American Museum has newly made its appearance in the hall of insect biology. It shows a three-foot square of ground on which grows a small white oak tree and the season is early autumn as announced by a few sprigs of white aster. The astounding sight is the presence of some five hundred of one of our largest North American butterflies clinging everywhere to leaves and twigs. This five hundred is reported by those who have witnessed the swarming and what seems to be the migration of the monarch butterfly to be a very small part indeed of the numbers that actually come together. They gather from miles about. Fifty or more can be caught by one sweep of a small net over the leaves where they rest, while those not captured but dislodged by the movement of the net are for number like a storm of falling leaves as they flutter and poise to settle lightly back on the tree. Tall slender sprays of goldenrod and aster, gradually hidden under burdens of folding and unfolding brown wings, finally bend to the ground under the weight — a fact by the way that gives a vivid idea of numbers, for weight effective in any degree is not associated in our minds with butterflies. In the swarming at Clinton, but a stone's throw from the sea beach, the butterflies gathered on the oaks and hickories to a height of twenty-five or thirty feet, on the sheltered sunny side of the grove. They were there one day and gone the next, following the coast southward.— Editor.

THE "SHOVEL-PIT" AT ELY, NEVADA

REMARKABLE SURFACE COPPER MINING SHOWN IN A LARGE CANVAS RECENTLY
PRESENTED TO THE MUSEUM BY THE NEVADA CONSOLIDATED
COPPER COMPANY

By L. P. Gratacap

EUREKA Cut at Ely, Nevada, referred to by the engineers of the Nevada Consolidated Copper Company as the "shovel-pit," is to-day a gigantic trench excavated in the side of a mountain. Terrace by terrace, it is gradually enveloping and destroying this mountain and when the destruction is accomplished the shovel-pit will assume the shape of an enormous basin about one mile long, one-third of a mile wide and three hundred to four hundred feet deep, a topographic feature of such magnitude that if not in a region of restricted rainfall, it might slowly accumulate waters and become a lake. Sulphides of copper, as also of iron, are scattered throughout the mountain mass and although the percentage of copper is only one to three, or about seven hundred ounces in a ton of rock so that the amount of metallic copper in any cubic foot is insignificant, the total amount that can be extracted from the mountain reaches great dimensions, probably many thousands of tons, a billion and a half or more of pounds.

The Nevada Consolidated Copper Company through its president, Mr. S. W. Eccles, has presented to the American Museum of Natural History an enlarged painting of this remarkable property. This painting is displayed on the south wall of the hall of minerals and was executed by Albert Operti. In his treatment of the subject he has adopted the French school of color and technique, producing a canvas which harmonizes admirably with the hall. While strictly maintaining the correct geological features throughout, closely following panoramic photographs and engineer's plans, Mr. Operti has at the same time not omitted artistic atmosphere, holding before himself the difficult problem of uniting illustrative with æsthetic values.

The region in which this copper property is situated has been one of extended and not always successful exploitation, and to-day its metallurgical values are practically confined to the two important mining companies at Ely, the Nevada Consolidated and the Giroux. The ore-bodies are found along the Robinson Cañon where evidences of the disasters that attended the earlier mining enterprises are visible in deserted smelting works, the smallness of whose slag dumps betrays the failure of premature hopes. The earlier operations continued intermittently for some years, until M. L. Requa and F. W. Bradley of San Francisco, recognizing

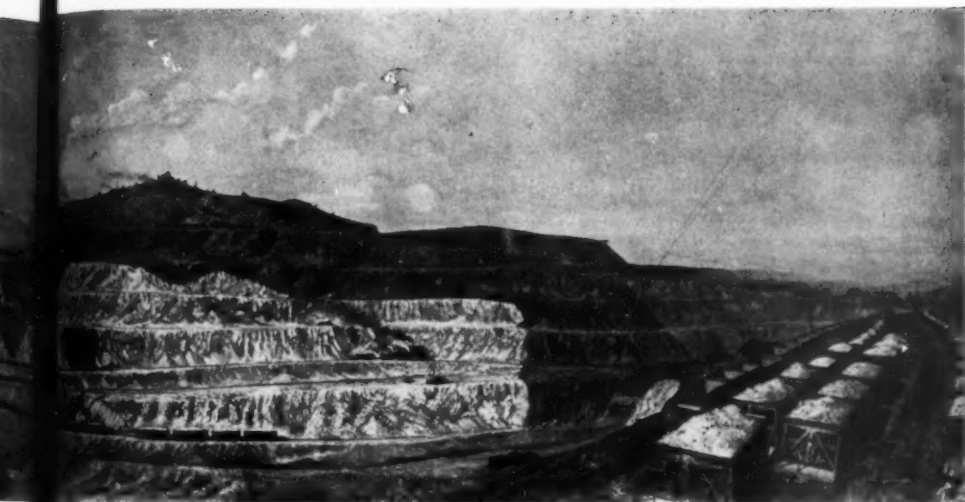


A new canvas in the hall of minerals — the "Shovel-Pit" of Ely, Nevada. This was painted by Albert Operti and presented to the American Museum by the Nevada Consolidated Copper Company through its president, Mr. S. W. Eccles

the wide dissemination of the copper ore, were led into a calculation of the ultimate magnitude of the resources of the area. Prof. Andrew C. Lawson of the University of California made a geological survey of the district, and under the guidance of his conclusions, these capitalists secured the more promising grounds. The company became well financed and aggressive mining was pushed with astonishing results.

As to the geology of the Robinson Cañon, the region is a limestone formation into which, at a long distant time in the past, bodies of molten rock have penetrated bringing with them copper minerals which have remained both in the intruding rock and in the limestone, especially on the south side of the cañon. These copper minerals are for the most part sulphides, although the action of the water carrying oxygen has through many sections of the hills converted the sulphides into carbonates (green malachite), and the lower layers of the formation have also from the beginning been slowly enriched by having transferred to them the copper contents of the overlying beds. Sulphides with a low percentage of copper have in this process been changed or mixed with sulphides of a higher percentage and this secondary zone of enrichment as it is called, contains the most valuable ore. Below this again are the primary beds which have not been enriched in this way and whose mining becomes a question for metallurgical economics.

The work is carried on through the agency of powerful steam shovels.



Terrace by terrace this surface copper mining is destroying a mountain from which eventually will be extracted many thousands of tons of copper, probably a billion and a half of pounds. The canvas shows the workings as they were in 1910

which plow up the more or less shattered rock and dump it into trains of ore-cars, which again transfer it to the concentrators and smelters some twenty miles away. The system of work consists in stripping off the surface, which is practically barren of ore, in order to uncover the ore bodies below, the operations involving the construction of a series of ascending terraces on which the process of mining or stripping is continued simultaneously, with the highest always the most advanced in the work.

The painting represents the state of the workings in the summer of 1910, and displays instructively the relations of the geological elements to one another. The deserted diggings on the extreme left show terraces carried around an amphitheatre-like excavation through shattered rock containing the iron and copper oxides, and the commingling stains indicate the confused association. The center of the painting shows the broad convex breast of the hill which is the present focus of mining activity. The terraces rise seven stories with an equipment of cars, steam shovels and miners, and show distinctly the yellow stripping representing barren surface material to be carried by cars to the wash dumps, and the grayish white exposures underneath constituting the ore bodies to be mined with steam shovels and sent to the concentrator at McGill about twenty-two miles away. The train of cars on the extreme right is loaded with the crushed ore, described as looking like "crusted sugar," and the tracks lead away to the smelters.



Cane field with laborers and carabaos on the estate where was captured the twenty-four-foot regal python, the "Ular Sawa" of the natives

A PYTHON FROM THE PHILIPPINES

By Mary Cynthia Dickerson

AN authentic story touching a twenty-four-foot python's capacity for swallowing prey comes from the Philippines. Laborers found the snake on an estate near Iloilo, Panay, when on their way through



Photograph of wild boar swallowed by Philippine regal python. It was estimated to weigh 125 pounds. New York Zoological Park authorities assert that judging from the size of bones found in the stomachs of newly received pythons, a twenty-four-foot regal python could swallow a boar of 150 pounds

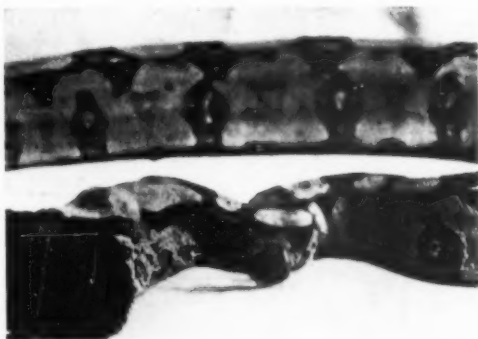
the forest to visit a trap set for wild carabaos. They killed the monster with their bolos, and on cutting it open found the boar, estimated to weigh one hundred and twenty-five pounds.

There has come down from ancient writers a large body of exaggerations in similar stories, the snake sometimes reaching one hundred and twenty feet and the prey the size of an elephant. The truth, however, is strange enough to leave no need for exaggeration. The New York Zoölogical Park reports that a forty-pound pig is the largest that has been given to its twenty-foot regal python, but that the snake could probably dispose of one of sixty or seventy pounds. The *Journal of the Bombay Natural History Society* for 1907 records the swallowing of a four-foot leopard by an Indian python, the world's second largest snake, and *Zoologischer Anzeiger* for 1907 says that a twenty-five-foot regal python in Carl Hagenbeck's Zoölogical Park at Hamburg swallowed a roebuck of sixty-seven pounds. Another in the same place is known to have eaten an Indian antelope of ninety pounds, and still another an ibex of ninety-seven pounds.

That these facts are possible is due primarily of course to the elastic ligaments between the bones of the snake's skull, especially those connected with the jaws. As the swallowing proceeds, the right and left sides of the jaws with their curved teeth

reach forward alternately and in rapid succession to draw in the prey, the scales become widely separated on the head, which except for the presence of the eyes loses all semblance to a head, and finally what seemed the impossible has taken place and an object has been swallowed that was at least four or five times the diameter of the snake's head.

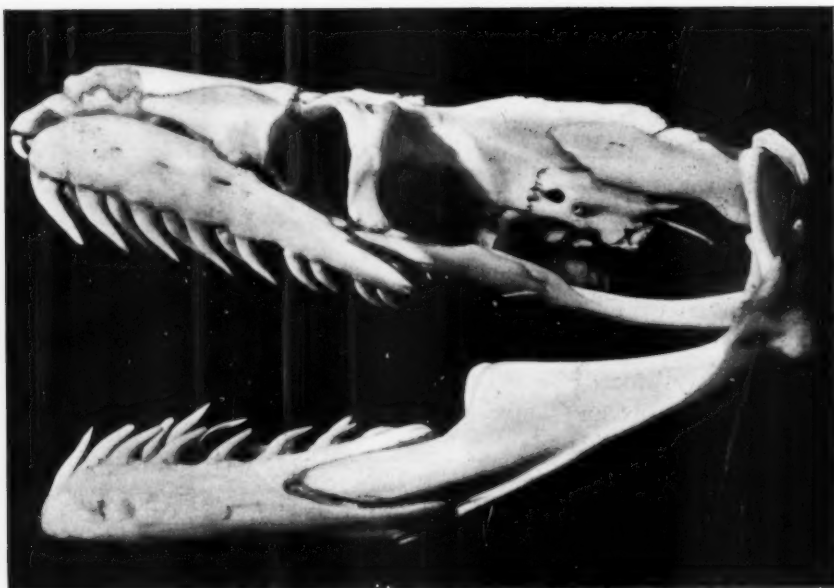
A vital question in the process concerns the breathing, when the internal openings of the nostrils, normally leading the air across the mouth to the glottis, are firmly blocked by the prey — and this perhaps for hours. The adaptation to overcome the difficulty is quite in keeping with the whole



South American boa (*Boa constrictor*) at the beginning of the process of swallowing a black rabbit



The process all but completed



Skull (exact length 5½ inches) prepared from the head of the twenty-four-foot python (*Python reticulatus*). It is on exhibition as representative of the non-poisonous type of serpent, showing the relatively equal teeth none of which are grooved to carry poison, but all curved backward better to hold the prey until the body is firmly coiled about it. Python presented to the Museum by Brig. Gen. George S. Anderson. Skulls prepared by Adolph Elwyn



Skull of bushmaster (*Lachesis mutus*) — actual length two inches — typical of the venomous snake. It shows the grooved fangs that carry the poison. The skull of the poisonous snake differs from that of the non-poisonous (in addition to the presence of fangs) in having the skull bone to which the teeth are attached (maxilla) movable in such manner as to throw the fangs into position for striking as the mouth is opened

astonishing matter, that is, the trachea, which lies along the floor of the throat and mouth, braced with its many cartilaginous rings so that it can be kept open notwithstanding the pressure of the prey upon it, is pushed forward until the glottis is outside of the mouth in the air, sometimes an inch and a half beyond the jaws. The wonder therefore is not so much in the swallowing performance itself as in the structures which have been evolved to meet the needs of this type of animal.

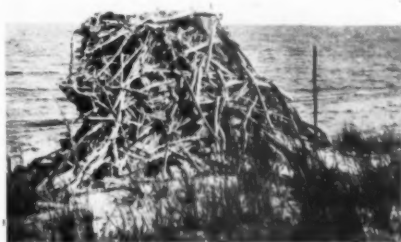
OSPREY NESTS ON GARDINER'S ISLAND

By William T. Davis

THE osprey or fish hawk, which arrives in the vicinity of New York about March 20, usually builds its huge nest in trees, as illustrated in the group on the third floor of the American Museum near the members' room. The nest is often placed in a wayside tree, sometimes close to a railroad where it is always of interest to the traveler. Not far back from the sea in parts of New Jersey, a state in which these birds have been protected by law since 1900, osprey tree nests stand like beacon lights along a coast.

That ospreys may build low nests however is proved in that Eden of theirs on Gardiner's Island near the eastern end of Long Island, where is the largest osprey colony within one hundred miles of New York City. There one may see many nests on the ground along the shore, on boulders in the rolling fields, or high in trees according to the usual habit. For there are large trees on Gardiner's Island, in fact a sufficient number in the almost original forest that still stands on parts of the island, so that all of the birds there could easily build in trees as they do on the mainland of New Jersey, were it necessary.

These ground nests have been brought about by the isolation of the birds and the absence of enemies that might destroy the eggs; and they are therefore of unusual interest as indicating a voluntary change of habit correlated with new conditions in the environment.



Osprey nest
on the beach



On a rock
in the sea



On the
ground with
no attempt at
nest building

MUSEUM NOTES

SINCE the last issue of the JOURNAL the following persons have been elected to membership in the Museum:

Associate Benefactor, MR. OGDEN MILLS;

Patron, MRS. ISAAC M. DYCKMAN;

Fellows, HIS GRACE, the DUKE of BEDFORD, COL. ANTHONY R. KUSER and MR. GRANT B. SCHLEY;

Honorary Fellows, LIEUT. GEORGE T. EMMONS and MR. GEORGE BIRD GRINNELL;

Life Members, MRS. HENRY F. DIMOCK, MRS. ARTHUR CURTISS JAMES, SIR ERNEST SHACKLETON, DR. EMERY J. THOMAS, DR. LEONARD C. SANFORD and MESSRS. CHARLES EDDISON, EBERHARD FABER, HOWARD FUGUET, GARRET A. HOBART, S. K. JACOBS, EDWARD H. LITCHFIELD, MARION McMILLIN, MANTON B. METCALF, LOUIS A. RIPLEY, QUINCY A. SHAW and HENRY R. TOWNE;

Sustaining Members, MRS. WALTER PHELPS BLISS, and MESSRS. EUGENE MEYER, JR., and ELIAS D. SMITH;

Annual Members, MRS. CLINTON L. BAGG, MRS. JOSEPH A. BLAKE, MRS. W. A. M. BURDEN, MRS. ARTHUR K. BUXTON, MRS. ALFRED A. COOK, MRS. ANDERSON FOWLER, MRS. C. D. GIBSON, MRS. W. W. HERRICK, MRS. EDWARD HOLBROOK, MRS. J. HERBERT JOHNSTON, MRS. O. KILIANI, MRS. ANTHONY R. KUSER, MRS. JOHN J. LAPHAM, MRS. LYDIA G. LAWRENCE, MRS. PRESCOTT LAWRENCE, MRS. JAMES M. LAWTON, MRS. E. A. LEROY JR., MRS. HASLETT MCKIM, MRS. CHARLES E. MILLER, MRS. GEORGE BARCLAY MOFFAT, MRS. R. BURNHAM MOFFAT, MRS. L. R. MORRIS, MRS. LAURA A. PALMER, MRS. FRANK H. PLATT, MRS. GEORGE D. PRATT, MRS. HERBERT PRATT, MRS. F. C. WALCOTT, MISS ANNA WELSH LAPSLEY, MISS A. P. LIVINGSTON, DR. PHILIP D. KERRISON, DR. HENRY M. KOLES and MESSRS. CHARLES E. APPLEBY, AUGUST BELMONT, JR., JOHN BOLAND, REGINALD P. BOLTON, GUTZON BORGLUM, MAXWELL EVARTS BUTLER, JOHN E. CURRIER, WILLIAM C. DELANOY, ALEXANDER P. FISKE, HENRY WALKER HALL, DAVID W. HARKNESS, SAMUEL HELLER, HENRY HELLMAN, CLARENCE A. HENRIQUES, JOSEPH HIRSCH, WALTER S. JOHNSTON, W. TEMPLETON JOHNSON, LEROY KING, M. KIRCHBERGER, W. THORN KISSEL, HERMAN KRAMER, JOSEPH LEVI, GUSTAV LEWKOWITZ, LUDWIG LITTAUER, R. FULTON LUDLOW, ROBERT H. McNALL, J. VARNUM MOTT, HERMANN NORDEN, GEORGE B. NORTH, ENDICOTT PEABODY, EDWARD SANDFORD PEGRAM, G. D. POPE, DAVID RANDALL-MACIVER, COLEMAN RANDOLPH, LOUIS RUHL, WILLIAM D. SARGENT, EVERETT B. SWEETZ, JOSEPH T. TALBERT, CHARLES H. TWEED, WILLIAM H. WEITLING, JUDD ELWIN WELLS, and GEORGE W. WINGATE.

At the forty-third annual meeting of the trustees of the Museum the following elections to membership were made in consideration of gifts or services rendered to the Museum:

MR. OGDEN MILLS, associate benefactor, in recognition of his gift of the Catlin collection of Indian paintings;

MRS. ISAAC B. DYCKMAN, patron, in recognition of her contribution for the preparation and publication of a bibliography on fishes;

HIS GRACE, THE DUKE OF BEDFORD, fellow, for his generosity in presenting to the Museum two fine examples of the Prjevalsky horse, a species which has hitherto been unrepresented in the Museum collections;

MR. ANTHONY R. KUSER, fellow, in recognition of his offer to present to the Museum a collection of pheasants of the world;

LIEUTENANT GEORGE T. EMMONS, honorary fellow, in recognition of his services in furnishing information in regard to the Indians of the Northwest Coast and in promoting field work in this region;

MR. GEORGE BIRD GRINNELL, honorary fellow, in recognition of his services in the development of the Museum's department of anthropology;

SIR ERNEST SHACKLETON, life member, in recognition of his splendid achievements in the field of exploration, as well as for his generosity in presenting to the Museum a collection of minerals from the South Polar region;

DR. LEONARD C. SANFORD, life member, in recognition of his generosity in placing his superb collection of birds of the world at the disposal of the curators of the Museum for study and reference.

THE Museum has secured, through the generosity of Mr. J. P. Morgan, Jr., the collections of minerals and meteorites left by the late Stratford C. H. Bailey of Oscawana-on-Hudson. Mr. Bailey had been an indefatigable collector for many years and had assembled representatives of nearly three hundred falls and finds of meteorites, at least twenty-one of which are new to the Museum's already great foyer collection. The gem of the Bailey collection is the aërolite or stone meteorite known as Tomhannock. This is a small mass weighing about three and one-quarter pounds, but it is nine-tenths of the entire stone that was found in 1863 on Tomhannock Creek in Rensselaer County not far from Troy, N. Y. It was first described by Mr. Bailey in 1887 and has always been highly prized.

THE clay model for a bust of Peary has been executed by William Couper and is now on its way to Florence to be cut in Carrara marble. The bust is a gift from Mrs. Morris K. Jesup and will take its place among the other marble busts in the niches in memorial hall.

A NEW group for the Darwin hall will shortly be placed on exhibition. It is designed to illustrate the struggle for existence and the complexity

of biological interrelationships of animals. The center of interest is a family of meadow mice. They are surrounded on three sides by various characteristic enemies — skunk, weasel and cat among the mammals, hawks and owls as representatives of birds, and the black snake among reptiles. In the remaining space are shown the food organisms to which the meadow mouse stands in the position of an enemy.

MR. C. W. LENG has put his valuable collection of "long horned" beetles at the Museum's disposal for use in filling gaps in its collections. This means a gift of some 870 specimens covering nearly 300 species not hitherto acquired.

MR. JOHN A. GROSSBECK, who has been specializing for some time on the Geometridæ, has given to the Museum his entire collection of these moths in addition to the series previously donated. This gift places the American Museum in the front rank as regards this division of Lepidoptera. The collection includes about 6000 specimens among which are more than 150 types.

THE Museum's new members during the year numbered 349, bringing the total membership on December 31, 1911 to 2,656. About 250 new members have been added to the mailing list since January first.

THE Museum has recently obtained by exchange with the University of Cambridge, England, some rare ganoids, the eel-shaped *Calamoichthys calabaricus*, which fill gaps in the synoptic series. The same exchange provides specimens of the young of the African lungfish, *Protopterus annectens*. The latter is an important addition to the Museum's series of growth stages of lungfishes, which was also recently enriched by a large collection of young *Ceratodus* from Queensland.

THE Annulate group has recently been completed. It displays a number of marine worms and worm tubes in their natural biological settings, together with hermit and fiddler crabs, whelk, scallops, minnows and other organisms which live in the mud or amid the eelgrass of shallow sea water. The group shows three sections: Above is the ocean as man sees it with the harbor of Woods Hole, Massachusetts, in the distance; below this, the sea as aquatic marine animals know it, where are seen, reproduced in wax or glass, the marine forms living there; and still below, a section of the sand and mud at the bottom of the sea with its population of burrowing animals. The group correlates with an adjoining case of annulates arranged in systematic series, and shows in natural size, living position and natural habitat many of the same species displayed in the case as enlarged models for structure study.

AMONG the accessions of interest received in the department of ornithology since the first of January are a mummified falcon from a tomb at

Thebes, a black-capped petrel found in Central Park, an apteryx presented by Robert Hill and Sons, and forty-five birdskins from Samoa presented by Mr. J. T. Lloyd and including two tooth-billed pigeons.

THE International Congress of Hygiene and Demography which meets in Washington next September has invited the Museum to contribute its public health exhibits dealing with bacteria, water supply and waste disposal to the exhibition which is to be held in connection with the Congress. Mr. Felix M. Warburg will defray the expense of transportation and installation.

AMONG recent accessions in herpetology is a specimen of the curious South American toad, *Pipa americana*, whose eggs are carried and hatched in pouches on the back. While the toad itself is not uncommon in collections, a perfect specimen carrying eggs or young is rare. A series of alligator embryos has also been received as a gift from Professor Albert M. Reese.

MR. A. D. GABAY has presented to the department of invertebrate zoölogy a valuable series of sponges from the Mediterranean Sea and from the Bahama Islands. The collection numbers more than a score of unusually fine types showing characteristic methods of growth and other significant details. Certain valuable crustacea have also been donated by Mr. Gabay.

IN view of his valuable services Mr. Harlan I. Smith has been elected honorary curator of archæology.

DR. JOHN W. CHURCHMAN of Johns Hopkins University has been spending two weeks at the Museum, using the collection of bacterial cultures for special studies in which it was necessary to test the comparative behavior of a large series of forms.

MR. EDWARD PAYSON MATHEWSON, general manager of the Anaconda Copper Company, and a life member of this Museum, has been presented with the gold medal of the Institution of Mining and Metallurgy, London. This medal was given "in recognition of his eminent services in the advancement of metallurgy generally and especially in regard to copper."

ONLY once in several years is there such attendance as was brought out by the lecture on February 29 by Paul Rainey, when more than four thousand people were not able to gain entrance to the lecture hall. Usually this hall's seating capacity of fourteen hundred is sufficient notwithstanding the fact that each member receives four tickets, making a total issue of some twelve thousand. The Museum regrets that all its members could not secure seats and arrangements have been made for a repetition of the lecture on March 13.

LECTURE ANNOUNCEMENTS

PUPILS' COURSE

These lectures are open to school children when accompanied by their teachers and to children of members of the Museum on presentation of membership tickets.

Mondays, Wednesdays and Fridays at four o'clock.

March 18 and April 22 — MR. R. W. MINER, "History of New York City."

March 20 and April 24 — MR. C. E. AKELEY, "A Monkey on Safari" [A Natural History Lecture].

March 22 and April 26 — MRS. A. L. ROESLER, "Early Explorers in America and the Indians."

March 25 and April 29 — DR. L. HUSSAKOF, "Views in Europe."

March 27 and May 1 — MISS S. WILDS, "Fairy Tales of Indians and Eskimo."

April 12 and May 3 — MR. A. E. BUTLER, "One of the Great Industries of the United States."

April 15 and May 6 — DR. L. HUSSAKOF, "Scenes from Pole to Pole."

April 17 and May 8 — MR. F. H. SMYTH, "The New York Fire Department."

April 19 and May 10 — MR. C. E. AKELEY, "African Jungle Stories."

PEOPLE'S COURSE

Given in coöperation with the City Department of Education

Tuesday evenings at 8:15 o'clock. Doors open at 7:30.

Four lectures on Europe by MR. GARRETT P. SERVISS. Illustrated by stereopticon views.

March 5 — "The Land of Walter Scott."

March 12 — "The Romance of the Rhine."

March 19 — "Castles and Cities of the Danube."

March 26 — "The Glories of Venice."

Saturday evenings at 8:15 o'clock. Doors open at 7:30.

The first five of a course of six lectures by MR. ALFRED W. MARTIN on "The Renaissance and its Interpretation in Art." Illustrated.

March 2 — "Art as an Interpretation of Human Life."

March 9 — "The Renaissance, its Origin, Birthplace and Significance."

March 16 — "The Dawn of the Renaissance."

March 23 — "The Morning of the Renaissance."

March 30 — "The High-Noon of the Renaissance."